

University of Montana

ScholarWorks at University of Montana

University of Montana News Releases, 1928,
1956-present

University Relations

12-1-2009

Scientists to place sensors beneath Greenland ice sheet

University of Montana–Missoula. Office of University Relations

Follow this and additional works at: <https://scholarworks.umt.edu/newsreleases>

Let us know how access to this document benefits you.

Recommended Citation

University of Montana–Missoula. Office of University Relations, "Scientists to place sensors beneath Greenland ice sheet" (2009). *University of Montana News Releases, 1928, 1956-present*. 22076.
<https://scholarworks.umt.edu/newsreleases/22076>

This News Article is brought to you for free and open access by the University Relations at ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana News Releases, 1928, 1956-present by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.



NEWS RELEASE

Dec. 1, 2009

Contact: Joel Harper, UM geosciences associate professor, 406-243-5867,
joel.harper@umontana.edu.

SCIENTISTS TO PLACE SENSORS BENEATH GREENLAND ICE SHEET

MISSOULA –

Researchers at The University of Montana and University of Wyoming intend to use a hot-water drill to plant multiple sensors below the Greenland ice sheet to better understand how water affects movement of the vast icy mass.

UM geoscientist Joel Harper, the lead investigator on the project, said the drilling will start next June and take three annual seasons to complete.

“These sensors at the bed of the ice sheet, which measure pressure and other things, will tell us something about the mechanics of how the ice moves over the bedrock below,” Harper said. “The deepest holes will be about 1,500 meters.”

Harper, an associate professor in UM’s Department of Geosciences, said the research may provide insights into how quickly the ice sheet will respond to climate change. If warmer temperatures cause more calving of icebergs at the coasts, sea levels worldwide may rise.

The research is funded by \$1.1 million from the National Science Foundation and 1.43 million euros (about \$2.1 million) from a Swedish, Finnish and Canadian consortium.

Harper’s partner is Neil Humphrey, a professor in UW’s geology and geophysics department. Jesse Johnson, an associate professor in UM’s computer science department, will contribute computer modeling related to the project.

Harper said they intend to drill eight to 12 different holes on the western slope of central Greenland. The goal is to create a sensor network that reaches high up near the center of the ice sheet to the edge of the ice, so a large elevation span will be covered.

The special drill the scientists will use weighs about 12,000 pounds. They intend to build much of it themselves. On the ice, diesel fuel will be used to convert snow into 185-degree water that is used to melt down into the ice sheet using high-pressure hoses. Drilling must be continuous, as the boreholes quickly freeze shut, and the process can take 24 hours for the deeper holes. Then the sensors must be immediately inserted with a cord running to the surface, where devices record the measurements.

"It's not easy work," Harper said. "You are out there in your Carhartts and adding diesel to generators and troubleshooting pumps. And as soon as you are done with the heavy drilling mechanical work, then you have to go into science mode and start working with persnickety electronics and stuff. We'll have to do rotating shifts so people can catch a nap."

The researchers will revisit the drilling sites once or twice a year to download the sensor data. Harper said they will use GPS to find the sites in the vast, flat, white landscape, and he expects the holes to move 100 meters or more per year.

He said their drill will be flown to Kangerlussuaq, Greenland, on the west coast, in a U.S. Air National Guard C-130 cargo plane. A helicopter then will fly the drill and their equipment to the lower-elevation drilling sites. For the higher sites, a C-130 will fly them to a remote snow runway, or "skiway." They then will haul their equipment 150 to 200 kilometers with snow machines.

Harper said they will have about eight researchers at their tent campsites, and these will include UM graduate students.

“I’ve been doing this type of work for 10 years on Alaskan glaciers, and now it’s exciting that we are moving to a big ice sheet,” he said. “But we only drilled 300 or 400 meters in Alaska, so this is going to be a whole new experience. We definitely don’t know much about what goes on underneath these ice sheets.”

###

CBS

Local, dailies, weeklies

120109joel